# NATIONAL
# PROJECTED WOOD SASH UNITS

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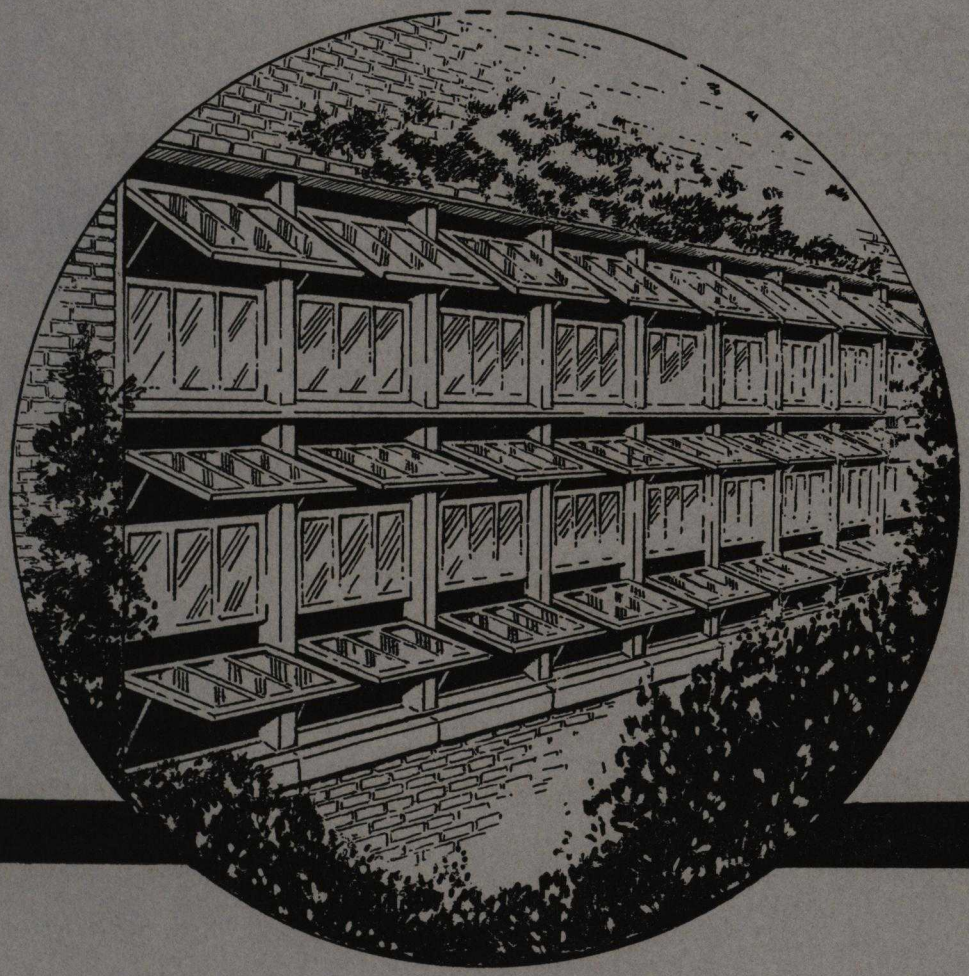

## MANUAL A

by NATIONAL DOOR MANUFACTURERS ASSN., Inc.
332 SO. MICHIGAN AVE., CHICAGO, ILL.

AIA File 19E-11

MANUAL A

# NATIONAL PROJECTED WOOD SASH UNITS

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Designed by

**GRAHAM, ANDERSON, PROBST AND WHITE, Architect-Engineer**
**Chicago, Illinois**

for

**NATIONAL DOOR MANUFACTURERS ASSOCIATION, Inc.**
**Chicago, Illinois**

★

National projected wood sash consist of 18 standardized basic units. Each basic unit is a complete opening in itself and may be installed individually, or the various units may be combined both in height and width to meet almost every installation requirement.

The standardized frame is designed to accommodate either bottom pivoted in-projecting vents or top pivoted out-projecting vents.

Great care has been exercised in the preparation of the accompanying details and specifications to insure installations of greatest efficiency and permanence.

**NATIONAL DOOR MANUFACTURERS ASSOCIATION, Inc.**
**Chicago, Illinois**

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FOR ADDITIONAL COPIES OF THIS MANUAL A
*write*
NATIONAL DOOR MANUFACTURERS ASSOCIATION, Inc.
332 South Michigan Avenue
Chicago, Illinois

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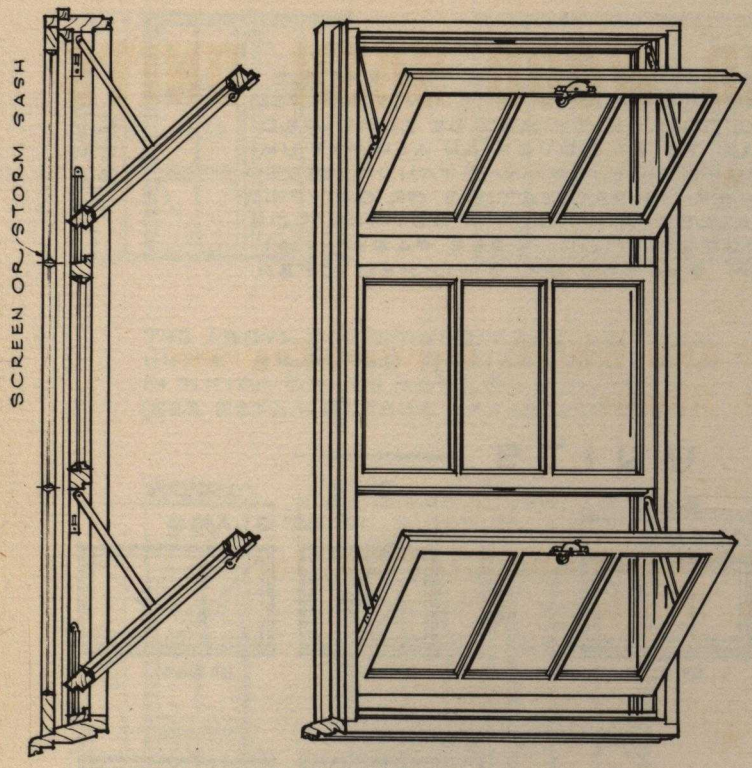
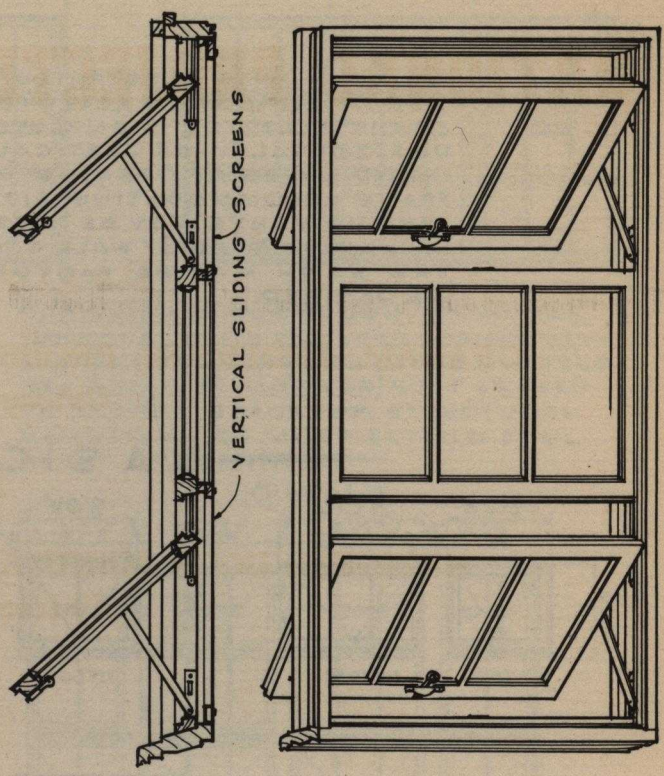
# NATIONAL PROJECTED WOOD SASH




IN PROJECTING.




OUT PROJECTING.

## GENERAL INFORMATION

Designed primarily for industrial and commercial buildings, schools, hospitals, etc., National projected wood sash units are ideal installations for almost any type building. The ability to provide screening without interference with shades, Venetian blinds, or draperies makes the out-projecting type particularly desirable in any case where these advantages are a consideration. Screens are installed from inside of building and the windows may be washed from the inside easily and safely.

Frames are completely factory fitted and all sash are prefitted to exact size so as to minimize the installation labor in the field. All parts are preservative treated for permanent and satisfactory service.

## HARDWARE

All hardware for the manual operation of the vents is furnished with the units. This hardware has been specially designed for National projected wood sash units. It consists of one pair of friction operating devices and one lock for each vent. The friction devices are spring controlled to compensate for natural wear and hold the vent in any desired open position. The frames and sash are designed to receive the friction device without additional fitting or housing in the field. Their application consists merely of screwing them into position. The latch likewise is surface applied. Hardware details are available on request.

## MANUAL OPERATION

National projected sash units are designed particularly for manual operation. Note that an "eye" has been provided in the latch handle so that the vents may be easily operated with a window pole even when the vents are located at a considerable distance from the floor.

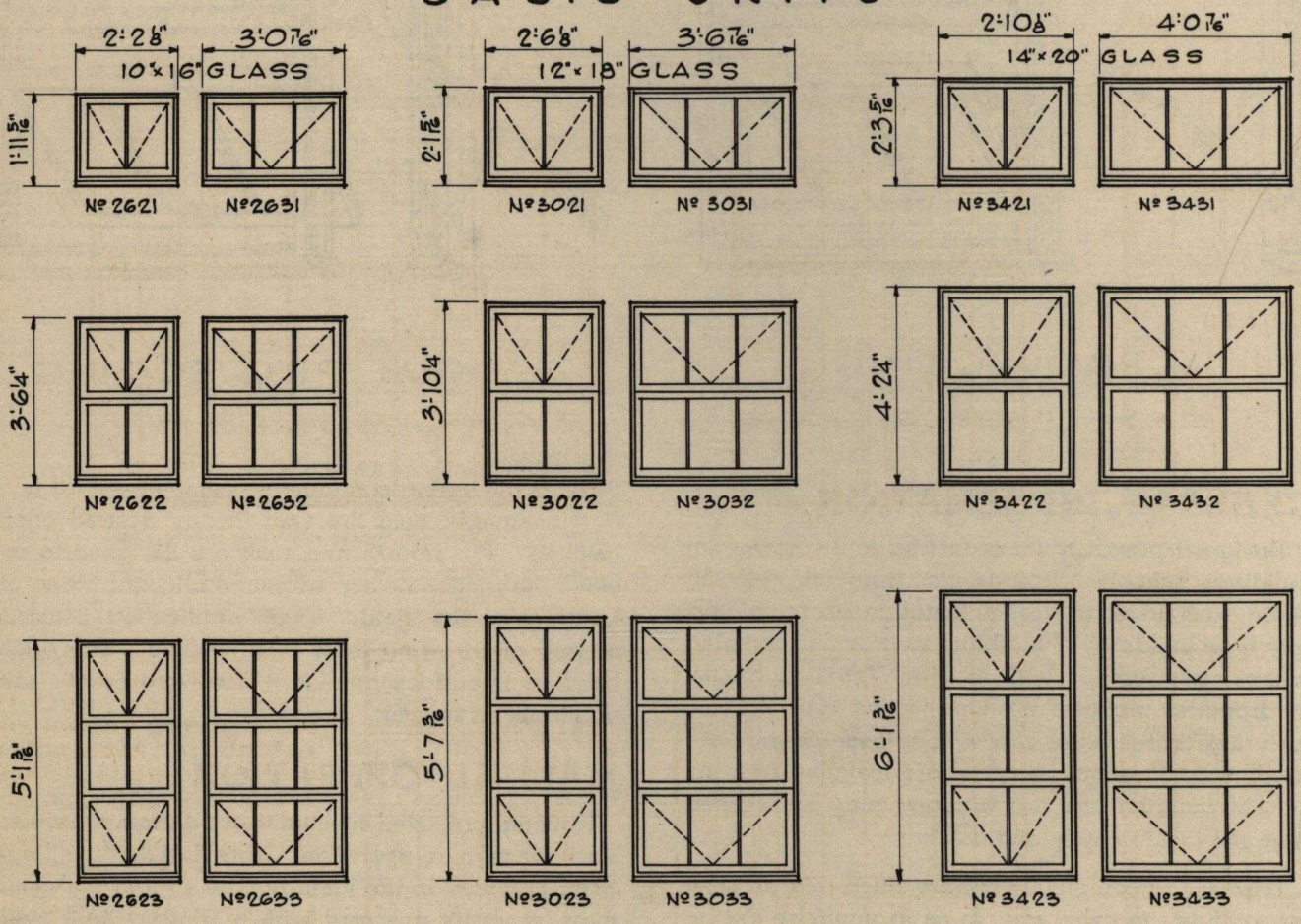
## MECHANICAL OPERATION

When necessary, however, various types of mechanical operating devices are available for long line sections of horizontally projected ventilators. For further information on mechanical operation see page 7.

# NATIONAL PROJECTED WOOD SASH

THE BASIC UNITS ILLUSTRATED BELOW CONSTITUTE THE ENTIRE LINE OF NATIONAL PROJECTED WOOD SASH. THE UNIT SYSTEM OF INSTALLATION IS EMPLOYED. THE UNITS MAY BE COMBINED HORIZONTALLY OR VERTICALLY TO PRODUCE AN ALMOST UNLIMITED RANGE OF OPENING SIZES. THE SAME STANDARDIZED FRAME ACCOMMODATING EITHER IN-PROJECTING OR OUT-PROJECTING VENTS MAY BE INSTALLED WITHOUT MODIFICATION IN VARIOUS TYPES OF WALL CONSTRUCTION. (SEE PAGE Nº 6) THE SASH MAY BE FACTORY GLAZED OR SHIPPED OPEN AS DESIRED.

## BASIC UNITS




ALL DIMENSIONS ARE OVERALL UNIT DIMENSIONS FROM THE POINTS INDICATED ON PAGES Nº 4 AND Nº 5. FOR MASONRY OPENING ADD 3/8" IN WIDTH AND 7/8" IN HEIGHT.

VENTS MAY BE TOP PIVOTED OUTWARD PROJECTING OR BOTTOM PIVOTED INWARD PROJECTING AS DESIRED.

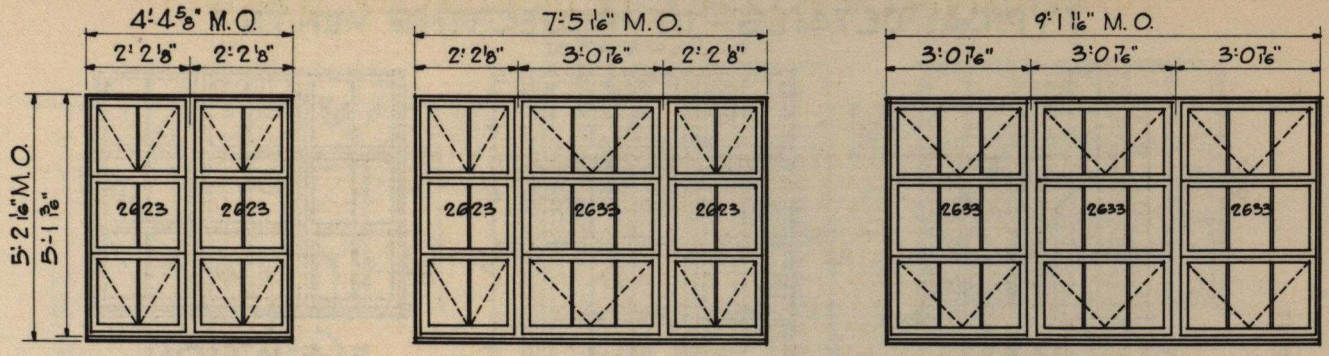
MANUAL OPERATION OF VENTS IS STANDARD AND WILL BE SO SUPPLIED UNLESS OTHERWISE SPECIFIED.

ALL SASH MAY BE INSTALLED STATIONARY OR THE VARIOUS OPENINGS MAY BE VENTED AS FOLLOWS:

OP'GS-1 SASH HIGH - MAY BE VENTED.
" 2 " " - EITHER THE TOP OR BOTTOM SASH MAY BE VENTED.
" 3 " " ANY ONE SASH OR BOTH TOP AND BOTTOM SASH MAY BE VENTED.

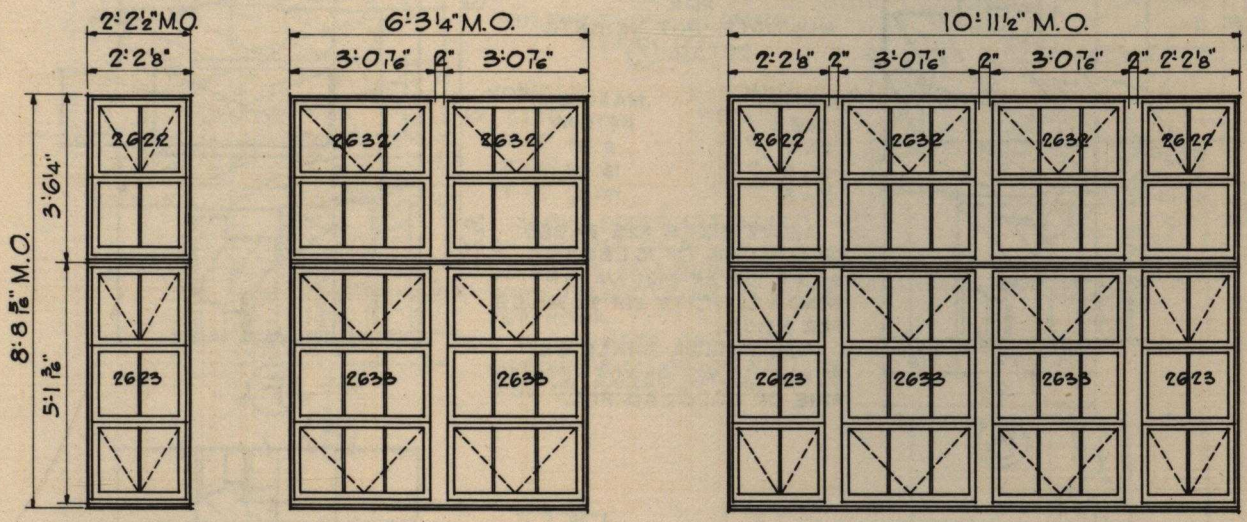
MUNTINS IN SASH MAY BE OMITTED OR SASH MAY BE DIVIDED IN ANY MANNER DESIRED.

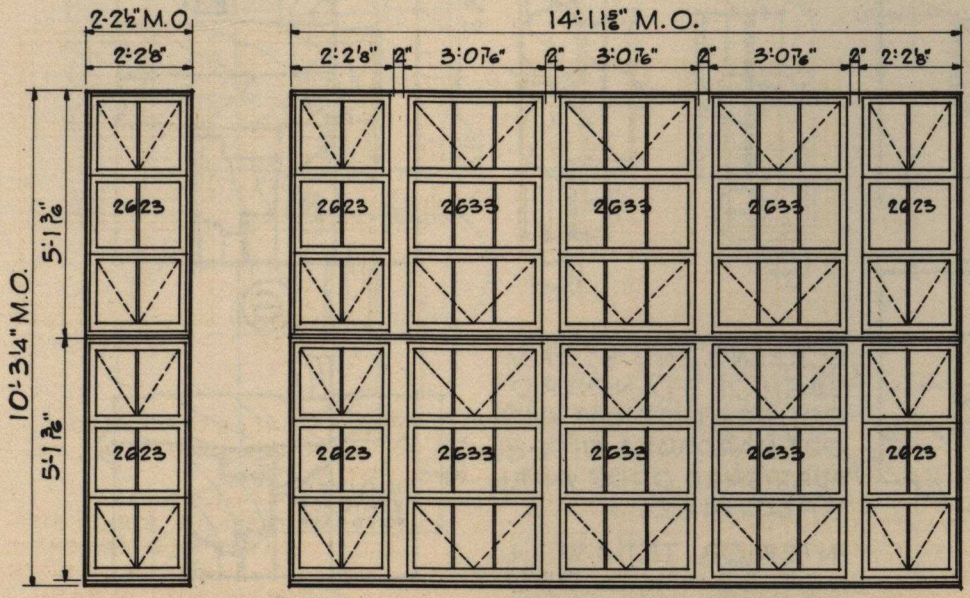
# NATIONAL PROJECTED WOOD SASH COMBINATIONS




THE ABOVE COMBINATIONS ARE INDIVIDUAL UNITS GROUPED HORIZONTALLY ONLY IN WHICH CASES NARROW MULLIONS (SEE DETAIL ⑥ PAGE Nº4&5) ARE USED.

THE COMBINATIONS SHOWN BELOW ARE INDIVIDUAL UNITS GROUPED HORIZONTALLY AND VERTICALLY IN WHICH CASES MULLIONS (SEE DETAIL Ⓕ PAGE 4&5) MUST BE USED TO PROVIDE SPACE FOR STRUCTURAL MEMBER WHICH MUST EXTEND FULL HEIGHT OF OPENING.



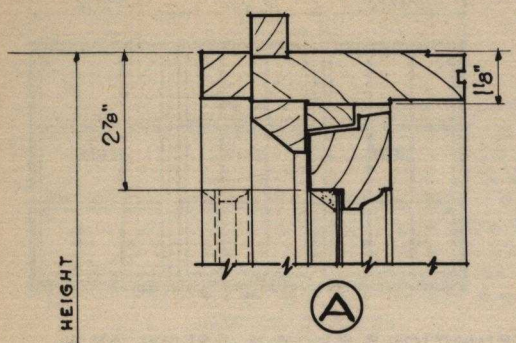

ONLY A FEW TYPICAL COMBINATIONS ARE ILLUSTRATED. OBVIOUSLY THE BASIC UNITS SHOWN ON PRECEDING PAGE MAY BE COMBINED BOTH HORIZONTALLY AND VERTICALLY TO MEET ALMOST EVERY INSTALLATION REQUIREMENT.

SILLS ABUT ON CENTER LINE OF EACH MULLION BUT OUTSIDE HEAD CASINGS ARE FURNISHED FOR CONTINUOUS LENGTH APPLICATION.

# NATIONAL PROJECTED WOOD SASH

## TYPICAL DETAILS – IN-PROJECTING VENTS

SCALE 3"=1'-0"

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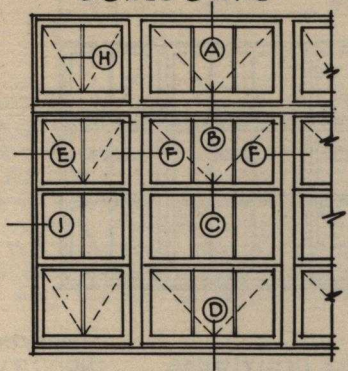
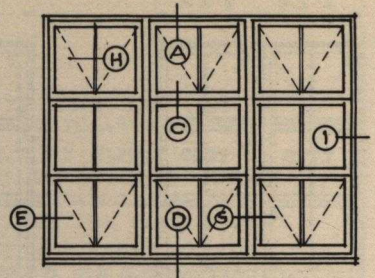
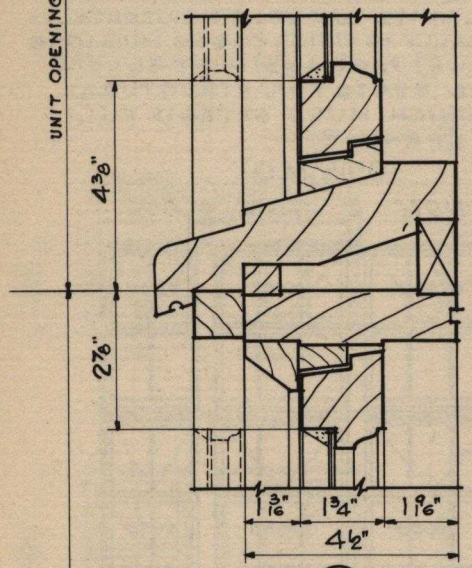



ELEVATION




ELEVATION



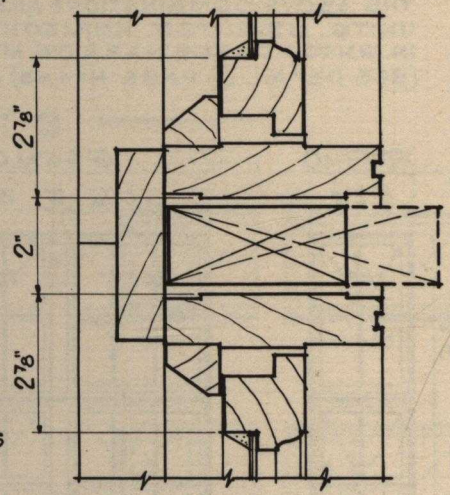

Ⓑ

VERTICAL MULLIONS FOR MULTIPLE UNIT HEIGHTS DETAIL (F)

| NOMINAL SIZE | MAXIMUM HEIGHT |
|---|---|
| 2" x 4" | 8'-6" |
| 2" x 6" | 13'-0" |
| 2" x 8" | 17'-6" |

ABOVE SIZES ARE BASED ON LOADING OF 15 LBS. PER SQ. FT. OR AN EQUIVALENT WIND VELOCITY OF 71 MILES PER HOUR.

ALL TIMBER SHALL BE STRUCTURAL GRADE YELLOW PINE OR DOUGLAS FIR.

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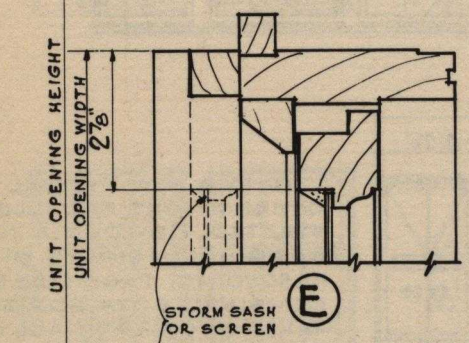


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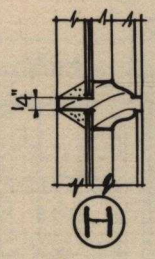


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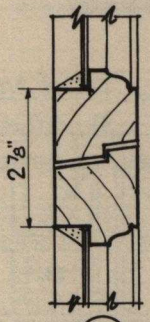


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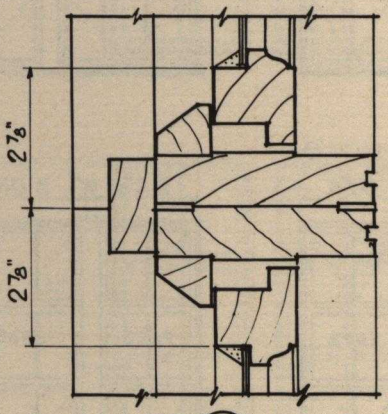
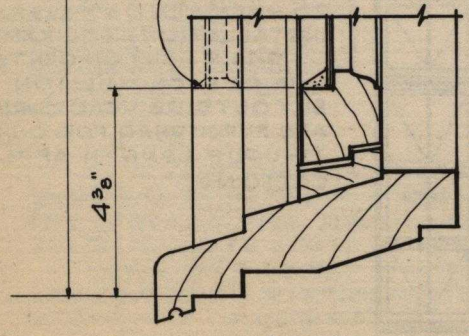



Ⓖ

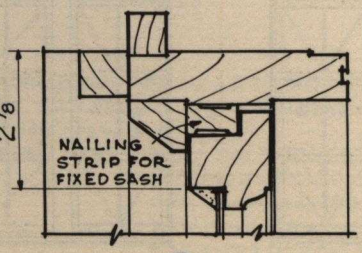
STORM SASH OR SCREEN




Ⓓ

SCREENS AND STORM SASH OF STANDARD CONSTRUCTION WITHOUT HARDWARE WILL BE FURNISHED ONLY WHEN SPECIFIED.

INTERIOR TRIM WILL NOT BE INCLUDED UNLESS SPECIFICALLY ORDERED. SEE PAGE Nº6 FOR INTERIOR TRIM SUGGESTIONS.

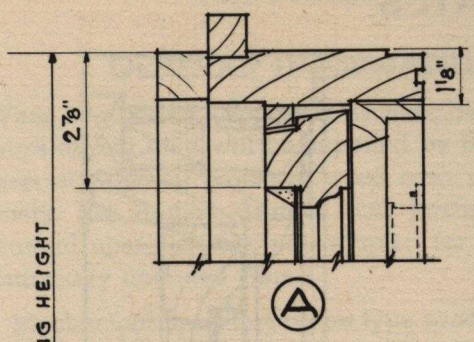



Ⓘ

# NATIONAL PROJECTED WOOD SASH

## TYPICAL DETAILS – OUT-PROJECTING VENTS

SCALE 3"=1'-0"

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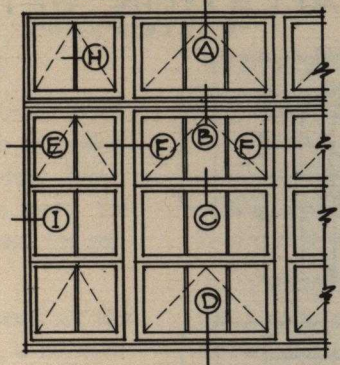
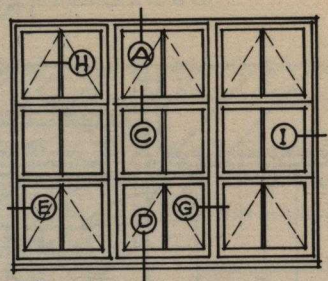
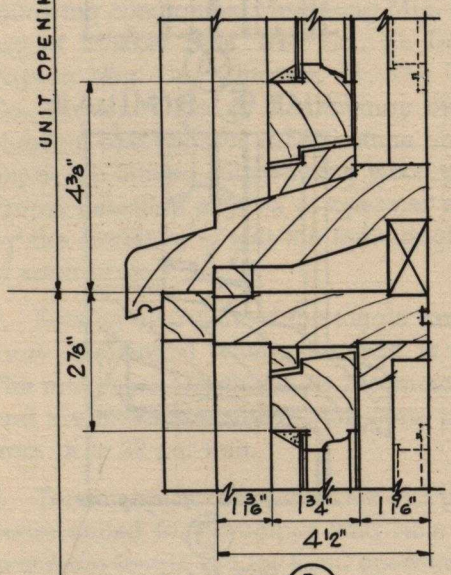



ELEVATION




ELEVATION




(B)

VERTICAL MULLIONS FOR MULTIPLE UNIT HEIGHTS DETAIL (F)

| NOMINAL SIZE | MAXIMUM HEIGHT |
|---|---|
| 2"x4" | 8'-6" |
| 2"x6" | 13'-0" |
| 2"x8" | 17'-6" |

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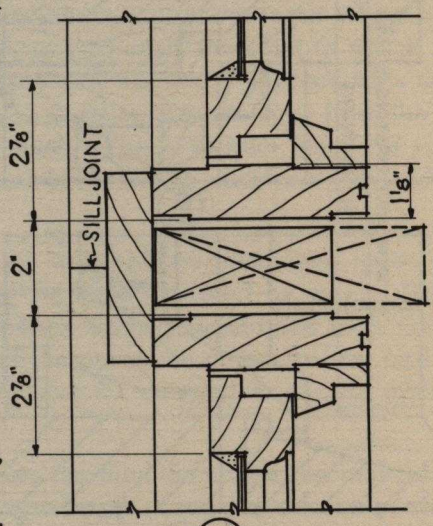
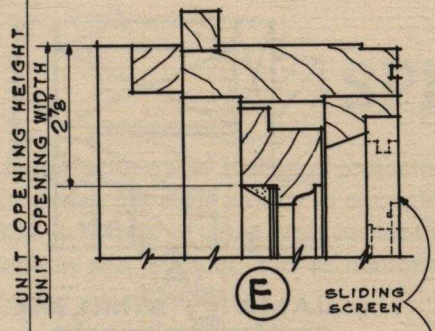
ALL TIMBER SHALL BE STRUCTURAL GRADE YELLOW PINE OR DOUGLAS FIR.

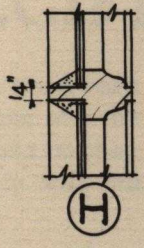



(F)

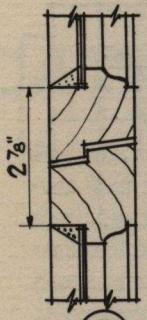



(E)

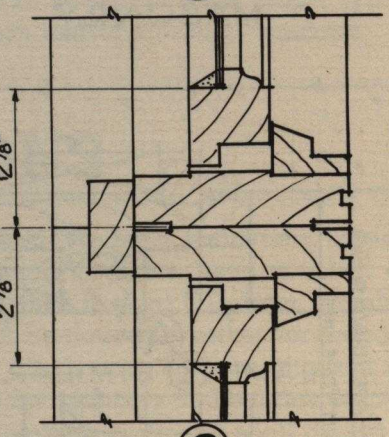
SLIDING SCREEN




(H)




(C)

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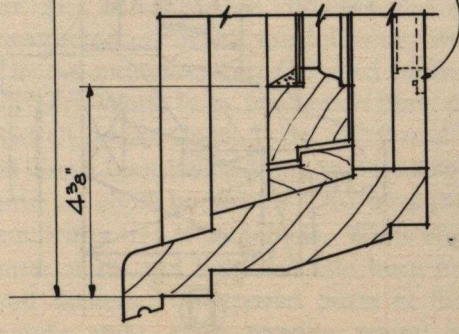
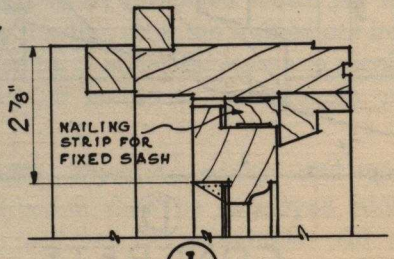



(D)

SCREENS WITHOUT HARDWARE ARE FURNISHED ONLY WHEN SPECIFICALLY ORDERED, AS FOLLOWS:

FOR UNITS 1-SASH HIGH SCREEN MUST BE TOP HINGED.

FOR UNITS 2 OR 3-SASH HIGH VERTICAL SLIDING SCREENS FOR EACH VENT WILL BE SUPPLIED.

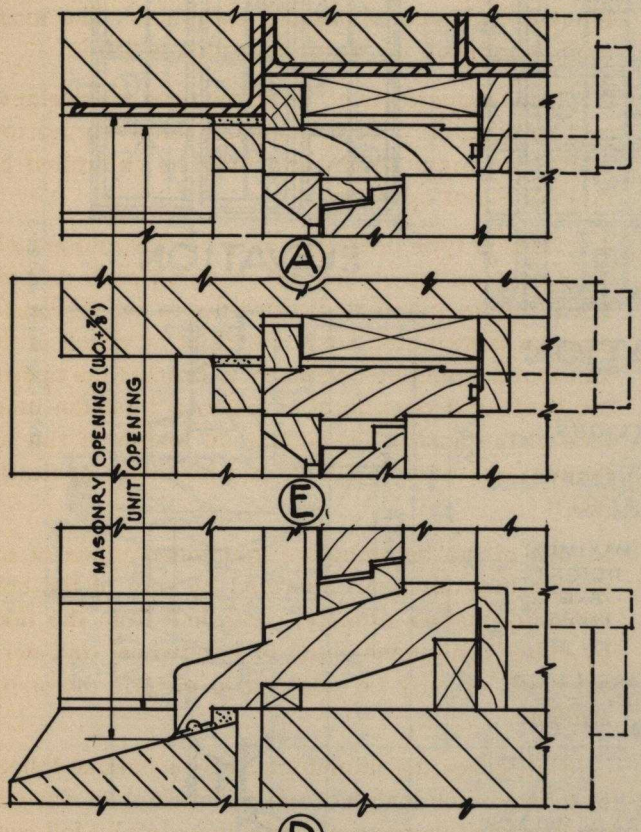



(I)

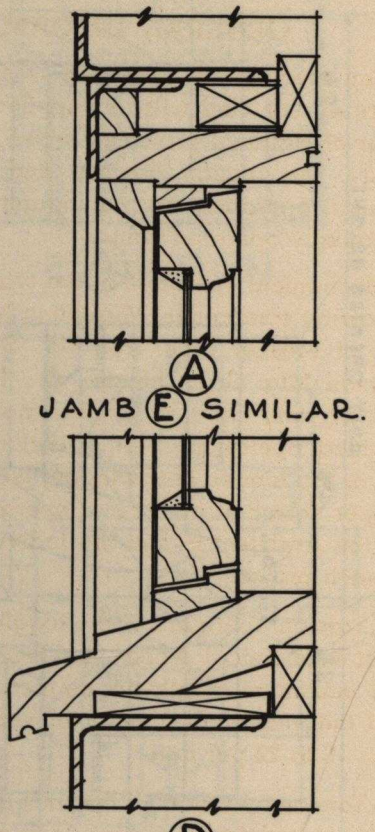
# NATIONAL PROJECTED WOOD SASH

## INSTALLATION DETAILS

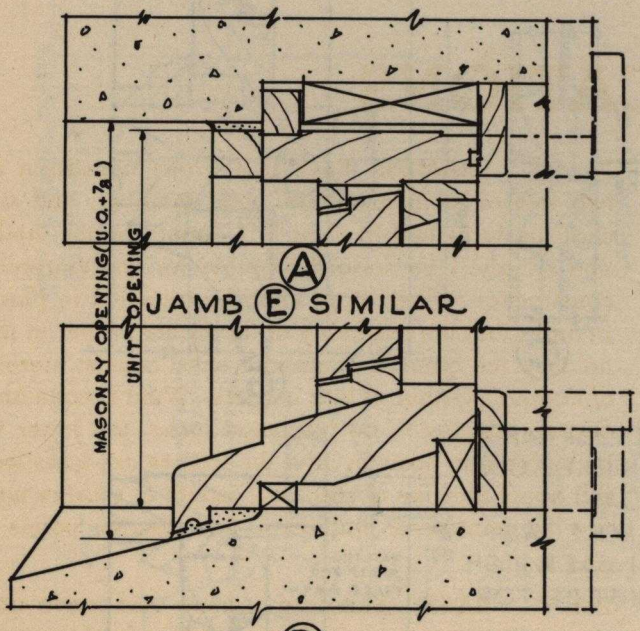
SCALE 3"=1'-0"



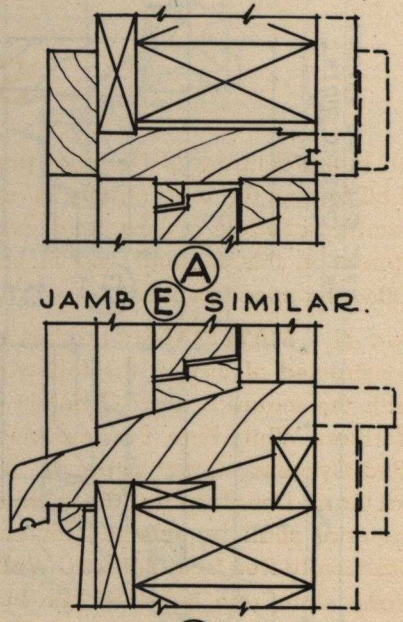

MASONRY




STEEL.




CONCRETE.




FRAME.

# Mechanical Operation of Ventilators

## General Information

When mechanical operation is specified, no hardware of any kind will be supplied by the manufacturer of National projected wood sash units. Obviously, the friction devices and latches used for manual operation are not adapted for use on mechanically operated vents.

Mechanical operators of the type produced by the following companies, Muschong Mfg. Co., a subsidiary of Mesker Bros. Iron Co., St. Louis, Mo., The Payson Mfg. Co., Chicago, Ill., The T. J. Callahan Co., Dayton, Ohio, or similar may be used for mechanical operation of either bottom hinged in-swinging or top hinged out-swinging wood projected sash. Proper selection of type of operator shall be made by the Architect to suit the individual requirements of each project.

1. Torsion operators of the toggle arm type are the most economical where the load is not too great. The maximum length run as recommended is 100 ft. and the maximum number of vents per run ranges from 16 to 22 per unit.

2. Torsion operators of the rack and pinion type are better suited for operating long runs of sash. The maximum length run for hand operated units ranges from 80 ft. to 130 ft. dependent on top or bottom hinging and type of manual operation. The maximum length run for motor operation is 350 ft.

3. Torsion operators of the screw type are designed and suitable only for openings of relatively narrow width and great height and may be controlled by hand or motor operation.

4. Tension type operators may be advantageously used only on top-hinged out-swinging sash as they have certain inherent disadvantages when considered for in-swinging sash, the chief of which is the fact that it would be necessary to bracket the operating shaft at a considerable distance from the inner face of the sash. The maximum length of run for manual operation is 200 ft. and for motor operation 300 ft.

5. All of the hereinbefore mentioned types of operators may be hand operated by any of the conventional means, namely, controlled from the floor by either continuous chain or handwheel and vertical shaft, or may be adapted to electric motor operation.

In all cases the manufacturer's recommendations as to maximum length of run and maximum size and number of vents per run should be carefully followed and care taken in selecting the proper type of operator for each individual run of windows.

# SPECIFICATIONS

All manufacturers of National projected wood sash shall furnish the units strictly in accordance with the details, schedule of sizes and explanations as they appear in this manual and in conformity with the following specifications:

Par. #1. **MATERIALS:** Frames and sash shall be constructed of any of the following woods optional with the manufacturer: C Select Idaho White Pine, Northern White Pine, Ponderosa Pine, or Sugar Pine. (Red Cypress—Coast Type, or "B and Better" Vertical Grain Douglas Fir if the architect so desires.) All material shall be selected for straightness and be practically free from defects. White sap, light brown water stain, and light red kiln burn are not considered defects. Unexposed parts of the frame may contain stain, pitch streaks, sound knots or any sound defects that will not affect the strength of the frame. Lumber shall be dried to a moisture content of 7% to 10%.

Par. #2. **FRAMES:** Each unit frame consisting of two sets of jamb members, head member, and sill shall be furnished in semi K.D. form. Jambs, head and sill shall be dadoed together for weatherproof construction. Sash stops shall be attached in place in order that the assembly of the frame proper in the field by the general contractor shall consist merely of nailing together at four corners. Wind breaks and outside casings to be furnished loose, the latter to be nailed into position after the frames are installed. Sill horns must be of sufficient length to receive narrow or reinforced mullions. See details, pages 4 and 5.

Par. #3. **SASH:** Standard mortise and tenon and pinned construction shall be employed (slotting of corner joints will not be permitted.) All muntins shall be tenoned into rails in all cases. Both ends of the pivoted side of each vent shall be eased or stop chamfered to clear sash stops when vent is

# SPECIFICATIONS—(Continued)

opened. The sticking of the sash shall be O.G., Bead, or any standard sticking regularly employed by the manufacturer. All sash shall be prefitted to provide a fitting clearance of ¼" in width (⅛" at each jamb) and 3/32" clearance at all horizontal connections. Stiles and rails shall be rabbetted as shown except when vents are to be mechanically operated the rabbets in the stiles are to be omitted. All sash shall be carefully drum sanded.

Par. ♯4. **TOXIC TREATMENT:** All frames and sash shall be preservative treated in accordance with the Preservative Minimum Standards of the National Door Manufacturers Association, Inc., of Chicago, Illinois.

Par. ♯5. **GLASS AND GLAZING:** National projected sash will be furnished by the manufacturer either open or glazed as specified in the general specifications. When glazed by the manufacturers the glass shall be bedded with standard glazing compound and sash puttied with a high grade primeless putty unless otherwise specified.

Par. ♯6. **HARDWARE FOR MANUAL OPERATION:** All hardware including screws for its application shall be furnished as follows but same is to be installed by the general contractor:

For Each Vent (Inward or Outward Projecting)

1 Pair special friction operating-devices

1 Lever type cam acting latch with "eye" in handle for window pole operation.

Par. ♯7. **HARDWARE FOR MERCHANICAL OPERATION:** No hardware is to be supplied. See page 7.

Par. ♯8. **INTERIOR TRIM, SCREENS AND STORM SASH:** These items will not be furnished unless specifically ordered.

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## ATTENTION: Architect and Specification Writer

To facilitate specifying National projected wood sash the following specification is suggested for incorporation in the general specification:

"National projected wood sash units shall be furnished for all window openings in accordance with the details, explanations, and specifications as they appear in Manual A published and distributed by the National Door Manufacturers Association, Inc., of Chicago, Illinois.

"The general contractor shall assemble the frames, provide and install the necessary corner braces and spreader pieces to keep the frame square and true as he installs them in the wall. He shall furnish and install all necessary blocking, anchor strips and anchors as required, as well as the full length structural members in the reinforced mullions. See details, pages 4 and 5. The jambs, head and sill shall be shimmed or anchored straight and true. The jambs forming the narrow mullions shall be carefully and rigidly nailed together with substantial finishing nails properly set and in similar fashion nailed to the structural members in the reinforced mullion. The outside casings are to be attached in place with finishing nails properly set after the frames are installed in the opening.

"The general contractor shall install the prefitted sash and apply the hardware required for the operation of the vents. Drill for all screws and apply hardware in a neat and workmanlike manner in strict accordance with the manufacturers directions furnished with the hardware. The fixed sash for each opening shall be installed as directed in above mentioned hardware instruction sheet."

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## IMPORTANT

In addition to the foregoing, the general specifications shall cover the following:

Interior Trim if desired
Priming and painting
Glass and Glazing
Caulking of frames if desired
Number of vents in each opening and whether they are to project inward or outward.
Whether vents are to be manually or mechanically operated.
Screens and storm sash, if desired.
If mechanical operation is specified, be sure to specify type required.

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